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# Soviet Battlefield Lasers

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Interagency Study on Soviet Battlefield Lasers

Preface

The purpose of this study is to update a [redacted] study on battlefield lasers and to attempt to fill some gaps. The terms of reference are the same; namely to address the issue of very-low- to medium-energy tactical laser capabilities of the Soviet Union and Warsaw Pact countries and the threat these pose to US and NATO forces. Topics to be covered include:

- o Technical characteristics of deployed and projected Soviet/Warsaw Pact laser systems in their primary, intended roles.
- o A deployed laser order-of-battle for Soviet/Warsaw Pact military equipment (tanks, armored vehicles, personnel carriers, helicopters, and aircraft).
- o Performance of deployed and projected laser systems used in any secondary or ancillary roles, e.g., a rangefinder used as a countermeasure to a sensor or as an antipersonnel blinding weapon.
- o Projected Soviet battlefield laser weapon capabilities.

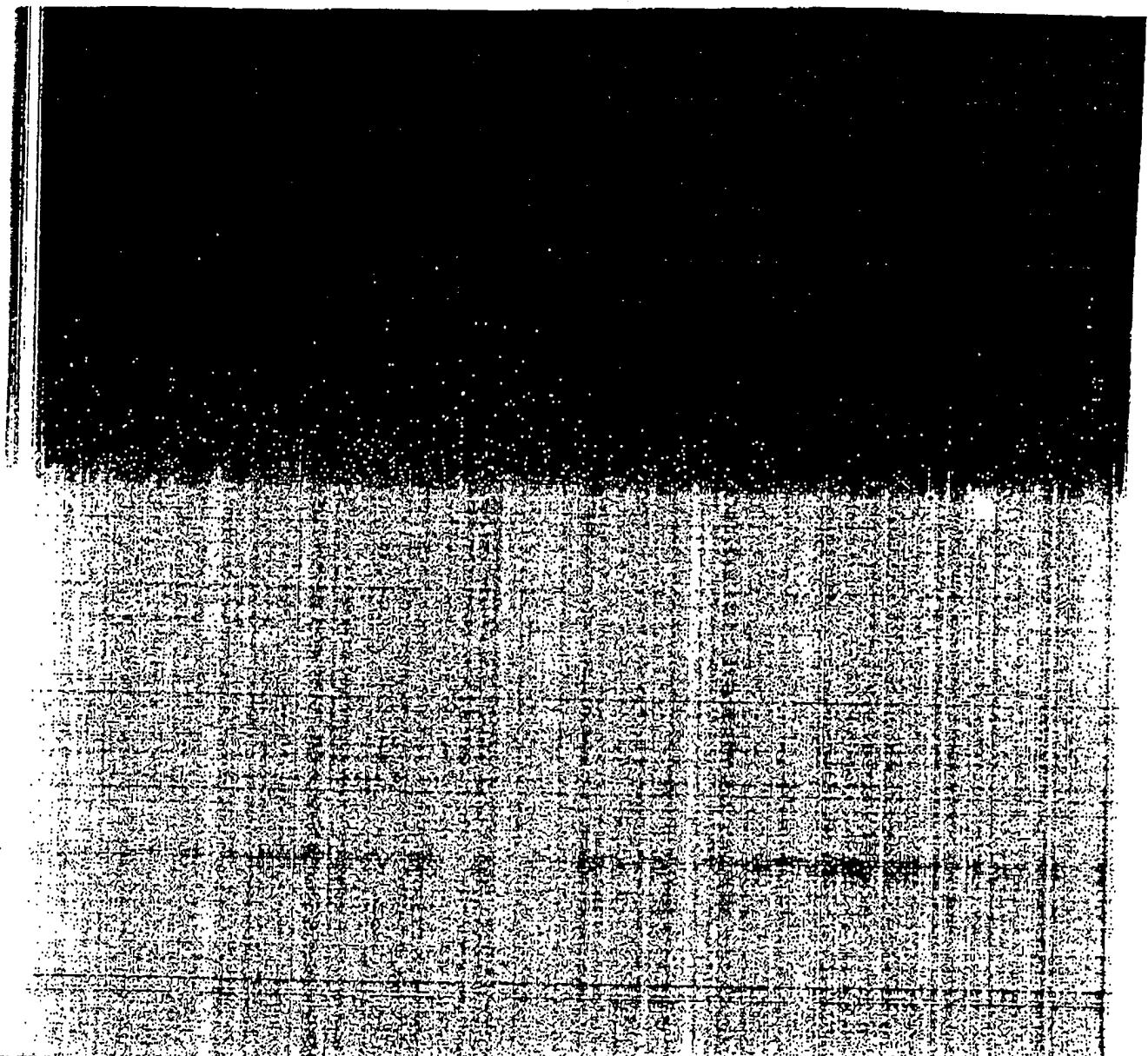
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KEY JUDGMENTS

We estimate that there are thousands of battlefield lasers, in particular laser rangefinders, currently in the first echelon of Soviet/Warsaw Pact forces. These lasers are an antisensor/antipersonnel threat. [REDACTED]

First generation laser weapons are being developed that would be capable of being fielded by the mid-1980s. We base this judgment on good evidence of Soviet research and development in direct support of laser antisensor/antipersonnel weapons. However, we have no direct evidence of Soviet deployment plans. [REDACTED]



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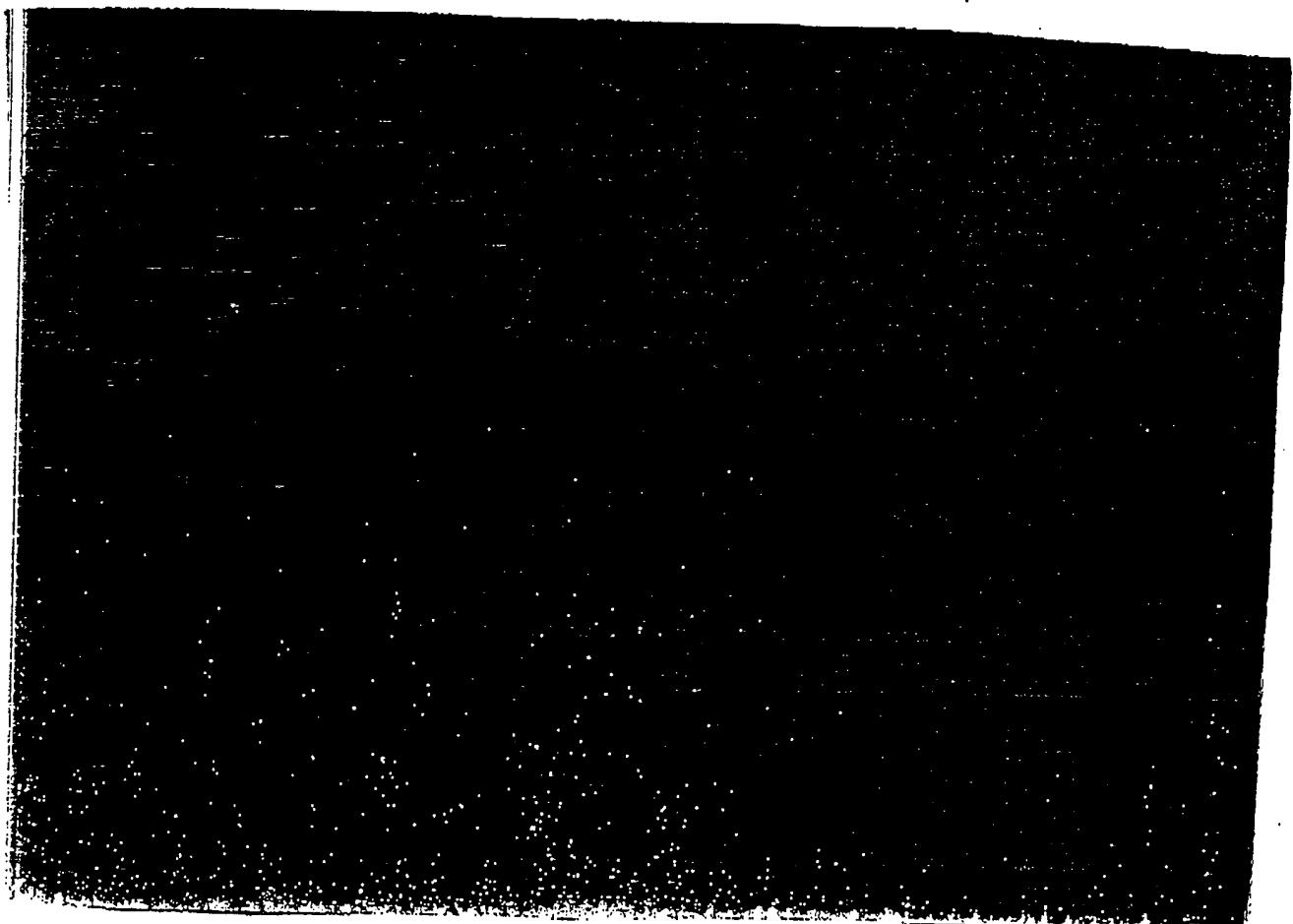
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## SECTION II

## MILITARY-RELATED LASER RESEARCH



Soviet laser ocular bioeffects research began in the 1960s. The military expanded their internal laser ocular bioeffects research effort in the early 1970s to include several prominent Soviet biophysicists and biomedical researchers from several different ministries. This research is applicable to the development of battlefield antipersonnel laser weapons and ocular protection from what they perceive is the Western battlefield laser threat. [REDACTED]

Soviet Laser and Laser Related Research Organizations

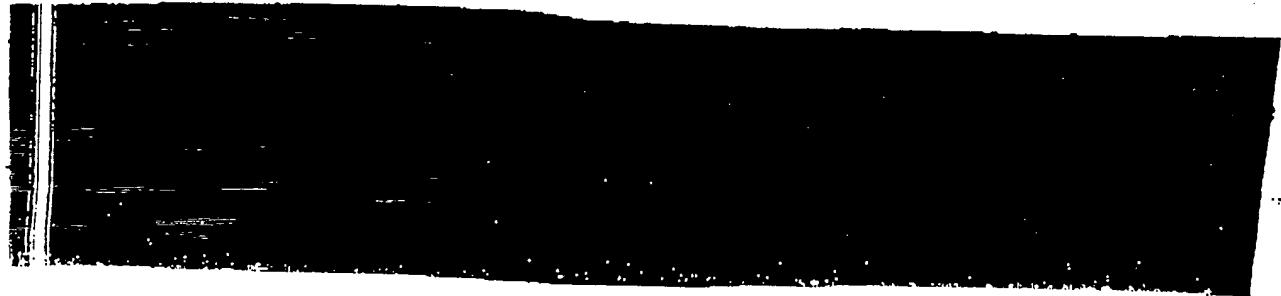
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Status of Soviet Laser Research

Over the last few years, more than twenty industrial CO<sub>2</sub> lasers systems with average output powers in the 1 to 40 kW range have been identified. Some of these systems were clearly designed and built under military-sponsored projects during the seventies. These systems are essentially "on the shelf" and reflect technology that could have found its way into a program for the deployment of a military laser system sometime from the mid-eighties onward. ■



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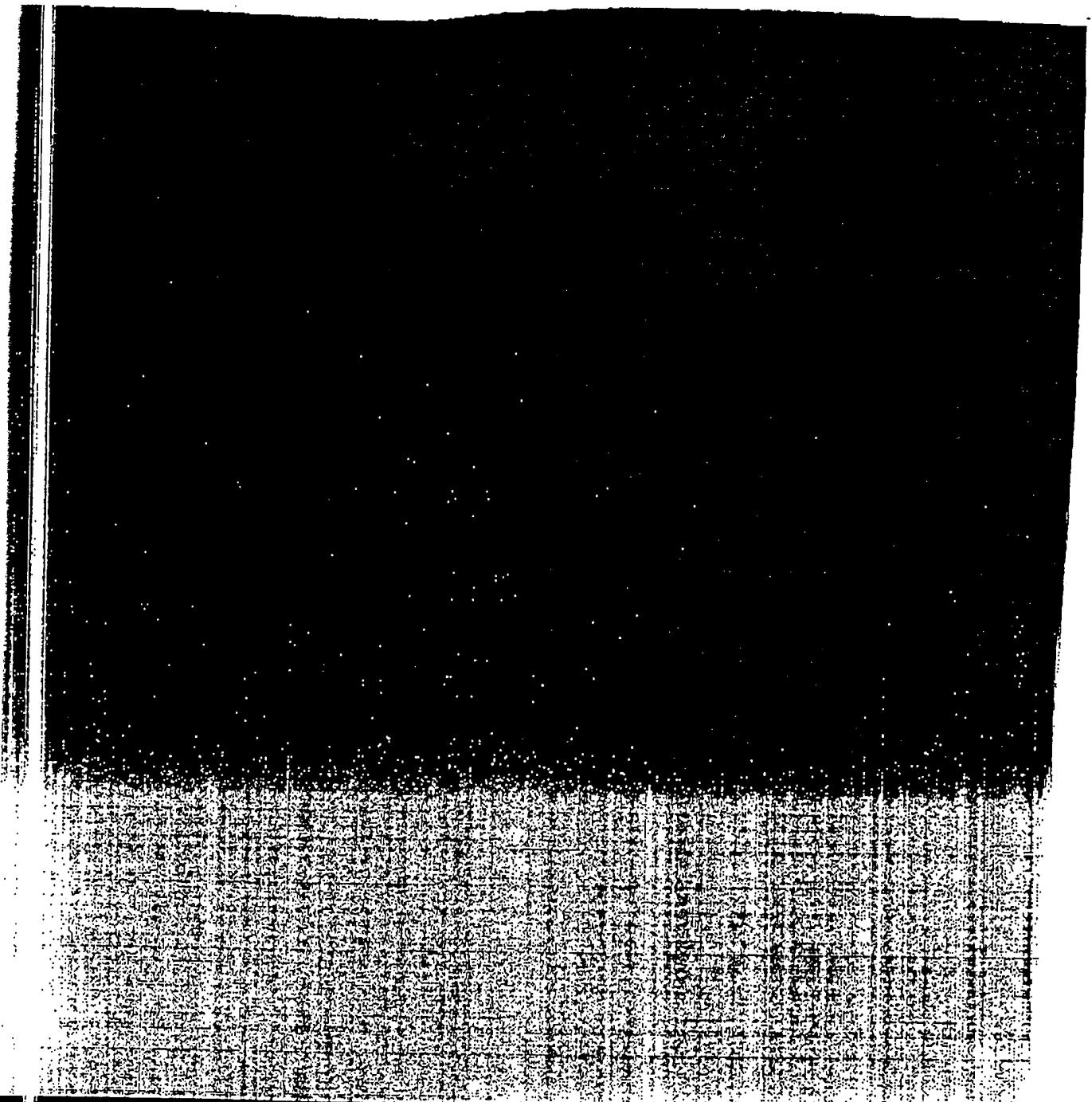
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Military Tactics and Training

In order to assess the threat that Soviet battlefield lasers pose to US systems, we have to examine how those lasers are employed in Soviet tactics. The ground-based LRF described in Section III are deployed at the regiment level or below. Scenarios of a regimental attack and a frontline defense illustrate battlefield laser tactics. [redacted]



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## Characteristics and Performance

### Rangefinders

LRF provide a quick, accurate method for measuring the distance to a target. The use of LRF has greatly enhanced the accuracy of field artillery in direct and indirect firing. Procedures using LRF have improved the accuracy of locating and referencing a forward observer by an order of magnitude. In addition to obtaining accurate range and azimuth to the targets, the forward observer uses the LRF to conduct precision registrations and to adjust fire by lasing on artillery round signatures.

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